

CLAIMS:

1. A method of encoding an audio signal, the method comprising the steps of:
providing a respective set of sampled signal values for each of a plurality of sequential segments;
analyzing the sampled signal values to generate one or more sinusoidal
5 components for each of the plurality of sequential segments;
generating sinusoidal codes comprising tracks of linked sinusoidal components;
determining phase update information indicative of the phase value of selected sinusoidal components in a track; and
10 generating an encoded audio stream including said sinusoidal codes and said phase update information.
2. A method according to claim 1 wherein said phase update information comprises the phase value of selected sinusoidal components.
- 15 3. A method according to claim 1 wherein said phase update information comprises a difference between the phase value of selected sinusoidal components and a continuous phase value for said selected sinusoidal components extrapolated from previous phase information through the linked sinusoidal components of a track.
- 20 4. A method according to claim 1 in which said phase update information is provided for every nth segment in a track.
5. A method according to claim 4 wherein $n=4$.
- 25 6. A method according to claim 4 wherein n varies according to the frequency of said linked sinusoidal components.

7. A method according to claim 1 wherein said phase update information is quantized according to one of a uniform or a non-uniform scale

8. A method according to claim 1 in which each track comprises a frequency, amplitude and phase for a sinusoidal component in a starting segment of a track and a frequency and amplitude difference for each sinusoidal component in a subsequent continuation segment of said track.

9. A method according to claim 1 further comprising:

synthesizing said sinusoidal components using said sinusoidal codes and said phase update information;

subtracting said synthesized signal values from said sampled signal values to provide a set of values representing a remainder component of said audio signal;

modeling the remainder component of the audio signal by determining

parameters, approximating the remainder component; and

including said parameters in said audio stream.

10. A method according to claim 1 wherein said sampled signal values represent an audio signal from which transient components have been removed.

11. Method of decoding an audio stream, the method comprising the steps of:

reading an encoded audio stream including sinusoidal codes comprising tracks of linked sinusoidal components and phase update information indicative of the phase value of selected sinusoidal components in a track; and

employing said sinusoidal codes to synthesize said audio signal including reconstructing sinusoidal components across a plurality of sequential segments as a function of continuous phase information extrapolated from previous phase information through the linked sinusoidal components of a track and said phase update information.

12. A method according to claim 11 in which the phase of said sinusoidal components in a segment k is re-constructed according to the equation:

$$\tilde{\phi}_k = \tilde{\phi}_{k-1} + \frac{L}{2}(f_k + f_{k-1}) + \Delta'_k$$

where L is the update interval of the frequencies and where Δ'_k is interpolated from said phase update information between selected sinusoidal components.

13. A method according to claim 12 where $\Delta'_k = \frac{\Delta_K}{n}$ or $\Delta'_k = \frac{(K-k+n).\Delta_K}{(n+1).n/2}$,

5 where n is the number of segments between selected segments, where $K-n < k \leq K$, where K is the number of the selected segment in a track for which phase update information is provided, and where Δ_k comprises a difference between the measured phase value of the selected sinusoidal component and a continuous phase value for the selected sinusoidal component extrapolated from previous phase information through the linked sinusoidal
10 components of a track.

14. Audio coder arranged to process a respective set of sampled signal values for each of a plurality of sequential segments of an audio signal (x), said coder comprising: an analyzer for analyzing the sampled signal values to generate one or more sinusoidal
15 components for each of the plurality of sequential segments;
a component for generating sinusoidal codes comprising tracks of linked sinusoidal components;
means for determining phase update information indicative of the phase value of selected sinusoidal components in a track; and
20 a bitstream generator for generating an encoded audio stream including said sinusoidal codes and said phase update information.

15. Audio player comprising:
means for reading an encoded audio stream including sinusoidal codes
25 comprising tracks of linked sinusoidal components and phase update information indicative of the phase value of selected sinusoidal components in a track; and
a synthesizer arranged to employ said sinusoidal codes to synthesize said audio signal including re-constructing sinusoidal components across a plurality of sequential segments as a function of continuous phase information extrapolated from previous phase
30 information through the linked sinusoidal components of a track and said phase update information.

16. Audio system comprising an audio coder as claimed in claim 14 and an audio player as claimed in claim 15.

17. Audio stream comprising sinusoidal codes representative of at least a
5 component of an audio signal, said codes comprising tracks of linked sinusoidal components and phase update information indicative of the phase value of selected sinusoidal components in a track.

18. Storage medium on which an audio stream as claimed in claim 17 has been
10 stored.